

TITLE OF THE INVENTION
METHOD AND APPARATUS FOR ACCESSING AND DISPLAYING
MULTIMEDIA CONTENT

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CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority from U.S. provisional application serial number 60/076,771 filed on March 4, 1998.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH
OR DEVELOPMENT

Not Applicable

REFERENCE TO A MICROFICHE APPENDIX

A microfiche appendix is attached. The total number of microfiche is one (1) and the total number of frames is twenty-four (24).

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention pertains generally to multimedia methods and devices, and more particularly to a multimedia delivery apparatus and method where media content from varied sources is accessed as a single seamless application.

2. Description of the Background Art

Sub 1) Many multimedia presentations rely on the use of computers. The computer may access and display media content from a single source, or from a variety of sources such as multiple mass storage devices and the Internet. Where media content from a variety of sources is displayed, however, the computer typically relies on individual components or programs operating independently to display the media content, and does not provide for any integration of the applications. Therefore, the simultaneous presentation of content elements is not seamless, and is displayed in a nonintegrated fashion. In order to make content from a variety sources appear as though it was from a single multimedia application for more effective presentation, there is a need for a multimedia presentation engine for delivery of multimedia of varied content, wherein high-bandwidth media can be stored on local devices, and current and time-sensitive content can be stored remotely on an Internet server, and wherein the varied content can be pulled together as one seamless multimedia application. The present invention satisfies that need, as well as others, and overcomes the deficiencies found in conventional multimedia presentation systems and methods.

BRIEF SUMMARY OF THE INVENTION

The present invention generally pertains to computer software executed on a computer which functions as a "multimedia delivery engine". By way of example, and not of limitation, the invention implements the following two core processes which are embodied in a computer program executed on a conventional programmed data processor:

Sub C2/ (a) the program stores media content for the subject matter to be presented in a database file as well as stores references (also in the database) to the media files located on disk or on the Internet; and

(b) the media content is then accessed by the program reading a content page record. This "reader" part of the program locates and displays all of the other media elements referred to in that record (such as video, audio, animation and images), and displays the HTML content of the record as text in a display window. The displaying process functions as follows:

1. The program receives an instruction to locate and access a particular database record or Web page.

Sub D3/ 2. In the case of a database record, the program locates that record and then writes the HTML text content of that record to a pre-named temporary cache file which the display window shows to the user. Since the content conforms to HTML specifications, this enables the use of graphics and hyperlinks in the display window. Having read and displayed the program-generated HTML temporary file, the program continues to load the other media elements referenced in the database record. As far

as the user is concerned, the program has just loaded another "page" of the content. By using special HTML tags in the textual content, the program can "translate" custom embedded instructions for hyperlinks. This enables the program to store commands for the "engine" in the HTML document itself. Where a conventional HTML document hyperlink would either address another HTML document, or a file, the custom tags can do this as well as refer to other records in the database, locate and display images located on the application's CD-ROM in another illustration window, load and run media components from the database and/or program CD-ROM and load Web server-based content. This process is seamless and transparent to the user. The net result is that the user views the content of this multimedia application as one integral application, regardless of the data's origin.

3. In the case of an instruction to locate a Web page, as long as there is a "live" TCP/IP link from the user's system to the Internet, the program will load that Web page into the display window just as if it is another page of the multimedia application itself. The program is written so as to be able to "interpret" the embedded instruction in the HTML document, and figure out on the fly where it should be looking for the next media component to display.

Given the above, the content for a proposed multimedia application can be assembled into the database that drives this "engine" and appropriate links made to media content on local hardware or remote servers with ease...

An object of this invention is to provide a multimedia delivery vehicle for varied content.

Another object of the invention is to provide a multimedia delivery vehicle wherein high-bandwidth media can be stored on local devices.

Another object of the invention is to provide a multimedia delivery vehicle wherein current and time-sensitive content can be stored remotely on an Internet
5 server.

Another object of the invention it to provide a multimedia delivery vehicle wherein varied content is accessed and displayed as one seamless multimedia application.

Further objects and advantages of the invention will be brought out in the following portions of the specification, wherein the detailed description is for the purpose of fully disclosing preferred embodiments of the invention without placing limitations
10 thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood by reference to the following drawings which are for illustrative purposes only:

FIG. 1A through FIG. 1J is a graphical functional block and system flow diagram showing a method and apparatus for accessing and displaying varied multimedia content in accordance with the present invention.

FIG. 2 is a graphical user interface for integrating the windows shown in FIG. 1A
20 through FIG. 1J.

FIG. 3 is a functional block diagram of a computer system suitable for implementing the present invention.

DETAILED DESCRIPTION OF THE INVENTION

For illustrative purposes the present invention is described with reference to the process generally shown in FIG. 1 and FIG. 2, the hardware configuration generally shown in FIG. 3, and the example of software code contained in the microfiche appendix hereto which is incorporated into and forms a part of this specification. It will be appreciated that the invention may vary as to configuration and details without departing from the basic concepts as disclosed herein.

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Sub 1 As can be seen in FIG. 1, the present invention includes an engine 10 which is a computer program stored on a mass storage device such as a hard disk drive 12. An example of code for engine 10 is shown in the microfiche appendix submitted herewith. A content database 14 associated with engine 10 stores a plurality of records 16 containing media content for the subject matter to be presented, as well as stores pointers 18 to the locations of media files located on CD-ROM, hard disk or other form of mass storage device, or on the Internet. The records 16 are stored in the database in the form of HTML script which provides instructions for engine 10 to build and display pages and their content. When a particular HTML record is selected, engine 10 writes that record to a temporary file, or cache 20 which is instantly read by an interface program that displays the HTML in a main display normal width window 22a or the main display expanded width window 22b. Images that are too large to comfortably fit either in the main display normal width window 22a or in the main display expanded width window 22b, can be stored in a database and displayed in a separate illustration

window 24. The HTML record can contain special hyperlinks 26 which load and display those illustrations in illustration window 24.

It will be appreciated that page images are automatically loaded as needed, as are media elements referenced in the record. Also, when engine 10 encounters an Internet URL in the record, it looks for a TCP/IP connection to the Web and locates and displays the requested web page. The multimedia engine 10 of the present invention determines the location of the stored media component to be displayed, fetches the component, and displays it in real time. A CD-ROM or DVD 28 would typically serve as a storage device for high bandwidth multimedia content such as instructor video files 30, demonstration video files 32, sound narration files 34, image files 36, graphic content for pages 38, and the like, that would not be practical to download from an Internet server in real time due to download delays and server bandwidth constraints.

SEE FIG. 2
SUB 1
A button display 40 is also provided for accessing media that is referenced in the database 14 and instructor video 42, narration 44 or demonstration 46 buttons would appear on button display 40 only when that media component is referenced in the database. Engine 10 determines component presence and file location, and then presents the component requested when the user clicks the corresponding button. For example, if available, the relevant video clips from the instructor video files 30 would be displayed in a video clip window 48 when requested by the user by clicking button 42. When instructor narration is available to complement the main topic, the appropriate button 44 appears and the relevant audio file from sound narration files 34 is played on a speaker 50 when button 44 is clicked by the user. If present, button 46 would be

clicked by the user and the relevant video clips from the demonstration video files 32 would be displayed in a demonstration window 52 to demonstrate a process being described in related text. Note that demonstration videos would be handled as a different media component than the instructor videos, and the engine of the present invention determines when the relevant component is required and then displays the appropriate video clips.

Sub C5 Referring again to control toolbar 40, a map/screen button 54 as well as back 56a and forward 56b navigation buttons are also provided. By clicking on map/screen button 54, the user will access a map window 58 which displays the current position in the database index with a highlight. Map window 58 will allow a user to double-click on a topic to display that page in the main display. The list is presented in a hierarchical form, which can be expanded or collapsed to give the user an outlined or detailed view of the content. Navigation buttons 56a, 56b all for sequential navigation in the map window for record to record movement. In addition, map window 58 includes a URL entry window 60 which allows entry of an internet URL to direct the main display to an on line Web page if a TCP/IP connection exists.

Sub B1 Referring also to FIG. 2, a graphical interface 62 is shown which integrates the individual windows described in FIG. 1. While the windows are generated as separate functions/entities in the software, they would not appear as separate windows in the graphical interface 62. Thus, it will be appreciated that the windows can be integrated on one interface as shown in FIG. 2 or as separate floating windows as shown in FIG. 1 without departing from the invention.

Lastly, referring to FIG. 3, a functional block diagram of a computer system 100 suitable for implementing the present invention is shown. Such a computer system 100 typically includes a bus 102 which interconnects major subsystems such as a

5 programmable data processor 104, system memory 106 (typically RAM), an input/output (I/O) adapter 108 to which input devices such as a mouse 110 and keyboard 112 are connected, a display adapter 114 to which a thin film transistor (TFT) or cathode ray tube (CRT) display 116 is connected, a removable media drive 118 for receiving a floppy disk or other removable media 120, a host adapter 122 connected to

10 a fixed disk 124, a DVD or CD-ROM drive 126 for receiving a readable or read/write DVD or CD-ROM 128, or other mass storage device, and a network interface 130 for providing a connection to a local network server through an Ethernet® connection or the like, or to a remote server through a telephone link or through the Internet. Those skilled in the art will appreciate that other devices and subsystems could be included, and that the devices and subsystems shown may be interconnected in different ways than shown in FIG. 3. It will further be appreciated that not all of the devices shown are necessary to practice the present invention, and that the present invention may be implemented on any conventional computer system under processor control.

15 Additionally, it will be understood that the operable software or code for implementing the present invention may be stored in computer-readable storage media such as

20 system memory 106, removable media 120, fixed disk 124 or CD-ROM 128.

Accordingly, it will be seen that this invention provides a multimedia delivery

vehicle for varied content, wherein high-bandwidth media can be stored on local devices, current and time-sensitive content can be stored remotely on an Internet server, and varied content can be accessed and displayed as one seamless multimedia application. The content for a proposed multimedia application can be assembled into the database that drives the software engine and appropriate links made to media content on local hardware or remote servers with ease.

Although the description above contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. Thus the scope of this invention should be determined by the appended claims and their legal equivalents.

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